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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,977	02/16/2001	Zhimei Jiang	3493.00125	2838

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EXAMINER	
MEW, KEVIN D	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/783,977	JIANG ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-10,12,16,17,23 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-10,12,16,17,23 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Response to Amendment

1. Applicant's Remarks/Arguments filed on 12/7/2004 regarding claims 7-10, 12, 16-17, 23, 26 have been considered and are currently pending. Claims 1-6, 11, 13-15, 18-22, 24-25 have been canceled by the Applicant.

2. Acknowledgement is made of the amended claims 7, 23, 26 regarding the deficiencies cited in the previous Office Action. The amended claims are acceptable and the claim objections to claims 7, 23, 26 with respect to the previous deficiencies have been withdrawn. In addition, claims 3-5, 15, 18, 20-22, 24-25 have been canceled by the Applicant and therefore the claim objections to claims 3-5, 15, 18, 20-22, 24-25 have been withdrawn

Claim Objections

3. Claims 7, 23 are objected to because of the following informalities:

The terms "exponent," "efficiency," and "W" in the equation should be more clearly defined in both claims 7 and 23. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by Westerberg et al (USP 6,236,656).

Regarding claim 12, Westerberg discloses a method of scheduling packets for delivery to one of mobile stations and a corresponding base station in a wireless packet network comprising the iterative steps of:

calculating channel efficiency for a mobile station (see col. 3, lines 43-63, col. 9, lines 38-67 and col. 10, lines 1-3) and

scheduling packets for delivery to said mobile station or said base station by determining a value of relative weight of said mobile station by a weighting equation, responsive to the calculated channel efficiency, wherein users with higher channel efficiency receive a lower weight than users with a lower channel efficiency (for long queues of data units, the load is adjusted by the switching system SS to decrease such queues or a lower scheduled priority to transmit and for short queues of data units, the load is adjusted to increase such queues or a higher scheduled priority to transmit, see col. 8, lines 1-11; note that long queues of data units represents a higher channel efficiency and short queues of data units represents a lower channel efficiency).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 7-10, 16-17, 23, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westerberg et al. (USP 6,236,656).

Regarding claims 7-9, 23, Westerberg discloses a switching system SS in connection to a base station system BSS to perform a method of scheduling packets for delivery to one of mobile stations and a corresponding base station in a wireless packet network comprising the iterative steps of:

calculating channel efficiency for mobile station (i) and

scheduling packets for delivery to said mobile station (i) or said base station by determining a value of relative weight of said mobile station (i) (**a method of scheduling data transmissions in a wireless communications system in which the switching system, in connection with the base station, bases its scheduling decisions on the link efficiency of each user**, see col. 3, lines 43-63, col. 9, lines 38-67 and col. 10, lines 1-3).

Westerberg does not explicitly show a weighting equation, a multiplier to be multiplied to the channel efficiency, nor a channel efficiency that may vary by a value given said exponent, responsive to the calculated channel efficiency, wherein said weighting equation is given by:

$W_i = efficiency_i^{exponent}$

However, setting a power factor or exponent to the channel efficiency does not define a patentable distinct invention over Westerberg since both the invention as a whole and the Westerberg are directed to scheduling packets in a wireless network according to the channel efficiency. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to schedule packets by varying channel efficiency in which channel efficiency is varied based on varying the power factor or exponent of the channel efficiency. The invention presents no new or unexpected results, so long as the quality of service for each user is achieved in a successful way. The motivation to schedule packets based on varied channel efficiency is to provide a controlled quality of service for each user so that the quality of service agreements with users are met. Therefore, varying the power factor or exponent of a channel efficiency that maintains quality of service would have been routine experimentation and optimization in the absence of criticality.

Regarding claim 10, Westerberg discloses all the aspects of the claimed invention set forth in the rejection of claim 9 above, except fails to explicitly show a method as recited in claim 9 wherein the value given said exponent is adjustable by an operator of said base station.

However, adjusting the exponent of the channel efficiency or the channel efficiency through an operator of the base station does not define a patentable distinct invention over Westerberg since both the invention as a whole and the Westerberg are directed to scheduling packets in a wireless network according to the channel efficiency. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to schedule packets

by varying channel efficiency such that the channel efficiency is adjusted through an operator of the base station. The invention presents no new or unexpected results, so long as the quality of service for each user is achieved in a successful way, either through adjusting the channel efficiency through an operator or automated system. The motivation to schedule packets based on varied channel efficiency through an operator is to provide a controlled quality of service for each user so that the quality of service agreements with users are met. Therefore, varying the power factor or exponent of a channel efficiency that maintains quality of service through an operator of base station is a design choice that would have been routine experimentation and optimization in the absence of criticality.

Regarding claims 16, 26, Westerberg discloses all the aspects of the claimed invention set forth in the rejection of claim 9 above, except fails to explicitly show the base station apparatus to perform a method as recited in claim 9 wherein a weight for said base station is determined according to selecting a value of said exponent along a horizontal axis of values from a minimum of minus two to a maximum positive value.

However, setting a power factor or exponent to the channel efficiency does not define a patentable distinct invention over Westerberg since both the invention as a whole and the Westerberg are directed to scheduling packets in a wireless network according to the channel efficiency. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to schedule packets by varying channel efficiency in which the channel efficiency is varied based on setting the power factor of the channel efficiency within the limit of a minimum of minus two to a maximum positive value. The invention presents no new or

unexpected results, so long as the quality of service for each user is achieved in a successful way. The motivation to schedule packets based on varied channel efficiency is to provide a controlled quality of service for each user so that the quality of service agreements with users are met. Therefore, varying the power factor or exponent of a channel efficiency that maintains quality of service would have been routine experimentation and optimization in the absence of criticality.

Regarding claim 17, Westerberg discloses all the aspects of the claimed invention set forth in the rejection of claim 16 above, except fails to explicitly show a method as recited in claim 16 where the minimum value of exponent is set at minus one.

However, setting a power factor or exponent to the channel efficiency does not define a patentable distinct invention over Westerberg since both the invention as a whole and the Westerberg are directed to scheduling packets in a wireless network according to the channel efficiency. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to schedule packets by varying channel efficiency in which the channel efficiency is varied based on setting the minimum value of exponent to minus one. The invention presents no new or unexpected results, so long as the quality of service for each user is achieved in a successful way. The motivation to schedule packets based on varied channel efficiency is to provide a controlled quality of service for each user so that the quality of service agreements with users are met. Therefore, varying the power factor or exponent of a channel efficiency that maintains quality of service would have been routine experimentation and optimization in the absence of criticality.

Response to Arguments

6. Applicant's arguments with respect to claims 7-10, 12, 16-17, 23, 26 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure with respect to channel efficiency based packet scheduling for interactive data in cellular networks.

US Patent 6,570,883 to Wong

US Patent 5,726,640 to Jones et al.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WELLINGTON CHIN
SUPERVISORY PATENT EXAMINER

KDM
Art Unit 2664